NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, NO TILL/STRIP TILL

(Acre)

CODE 329A

DEFINITION

Managing the amount, orientation and distribution of crop and other plant residues on the soil surface year-round, while growing crops in narrow slots, or tilled or residue free strips in soil previously untilled by full-width inversion implements.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following:

- Reduce sheet, rill, and wind erosion.
- Reduce wind erosion.
- Maintain or improve soil organic matter content, and improve the soil physical, biological, and chemical properties.
- Conserve soil moisture.
- Reduce the loss of nutrients and other contaminants from surface runoff.
- Provide habitat for wildlife.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This standard includes tillage and planting methods commonly referred to as no till, zero till, slot plant, row till, zone till, or strip till.

CRITERIA

General Criteria Applicable to All Purposes

Loose residues to be retained on the field, shall be uniformly distributed on the soil surface.

Where combines or similar machines are used for harvesting, they shall be equipped with spreaders capable of distributing residue over at least 80 percent of the working width of the header.

For spring-planted crops, residues shall not be burned or disturbed by full-width tillage operations except as follows:

Spot treatment for leveling ruts, or similar operations, may be performed when necessary. In these instances, tillage shall be limited to operations that minimize burial of surface residue.

Planters or drills shall be equipped to plant directly through untilled residue or in a tilled seedbed prepared in a narrow strip along each row by planter attachments such as rotary tillers, sweeps, multiple coulters, or row cleaning devices.

Seedbed preparation, planting, and fertilizer placement shall disturb no more than one-fourth of the row width. The row area formed by the planting operation shall be level with or slightly above the adjacent row middles unless the rows are planted on the contour.

Additional Criteria to Reduce Sheet, Rill, and Wind Erosion

In no case will the ground cover be less than 30% immediately after planting, using the line transect method. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed.

Additional Criteria to Maintain or Improve Soil Organic Matter Content, and Improve

the Soil Physical, Biological, and Chemical Properties.

The amount of residue at planting should provide the maximum ground cover that can be managed for satisfactory crop establishment. A minimum residue level of 80% ground cover at planting is required.

Additional Criteria to Conserve Soil Moisture

At least 50 percent residue cover shall be maintained throughout the year. Residue shall be evenly distributed and maintained on the soil surface. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed.

Additional Criteria to Reduce the Loss of Nutrients and Other Contaminants from Surface Runoff.

In order to reduce runoff, the amount of residue at planting should provide the maximum ground cover that can be managed for satisfactory crop establishment. A minimum residue level of 80% ground cover at planting is required.

Additional Criteria to Provide Habitat for Wildlife

Residue requirements (height, amount, and time period) shall be determined for the desired species using an approved habitat evaluation procedure. For example, protective cover will be a limiting factor for quail. Other species, like wild turkey and white tail deer are limited by the amount of food available. Residues shall not be removed unless it is determined by the habitat evaluation procedure that removal would not adversely affect habitat values.

CONSIDERATIONS

Consider that no till or strip till may be practiced continuously throughout the crop sequence, or may be managed as part of a system which includes other tillage and planting methods.

Consider that the production of adequate amounts of crop residues necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, and adjustment of plant populations and row spacings.

Consider that minimizing soil disturbance and minimizing the burial existing residue during the planting of a cover crop will enhance the efforts to reduce soil erosion, conserve moisture, and provide wildlife food and cover.

Consider that maintaining a continuous no till system will maximize the improvement of soil organic matter content. Also, when no till is practiced continuously, soil reconsolidation provides additional resistance to sheet and rill erosion. See Long Term No-till (778) for additional information.

Consider that the values of the residues for desired wildlife species can be further enhanced by leaving rows of unharvested crop standing at intervals across the field.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance described in this standard. Specifications shall be recorded using approved job sheets, narrative statements in the conservation plan, or other documentation. At a minimum, the following must be provided to the client:

1. The minimum residue cover requirements for the intended purpose.
2. Limitations on burning residue or full width tillage operations.
3. Limitations on removal of residue by baling or grazing, if applicable.
4. Operation and maintenance information.

OPERATION AND MAINTENANCE

The following operation and maintenance information should be provided to the client:

- Root-limiting zones or “hard pans”, where present, must be managed for best results from this practice.
- The continuous use of no-till planters, without adequate ground cover, will lead to

reduced soil tilth, increased runoff, restricted root development, and overall reduced results.